

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of claims:

1. (canceled).

2. (currently amended) A composition comprising an apo-carbonic anhydrase protein and a photoluminescent molecule selected from the group consisting of 4-aminosulfonyl[1-(4-N-(5-fluoresceinylthioureido))butyl]benzamide, 4-(2-hydroxyethylthio)-7-aminosulfonyl-2,1,3-benzoxadiazole, 7-fluorobenz-2-oxa-1,3-diazole-4-sulfonamide: $\beta$ -mercaptoethanol adduct, dansylamide, hydroxynaphthalenesulphonamide, 2-(3-methoxy-4-ethoxyphenyl)-4-chloroquinoline-6-sulfonamide, N-(1-anthracenyl)-4-sulfonamido-benzenesulfonamide, ethyl-2-(4-sulfonamidophenyl)-4-hydroxyquinoline-6-carboxylate and N-(N'-(4'-sulfamoylglutaranily-amidoethyl))-4-amino-3,6-disulfo-1,8-naphthalimide.

3-4. (canceled).

5. (original) The composition of claim 2, wherein the apo-carbonic anhydrase protein is a human apo-carbonic anhydrase.

6-7. (canceled).

8. (original) The composition of claim 5, wherein the photoluminescent molecule is conjugated to the apo-carbonic anhydrase through the cysteine replacement amino acid.

9-12. (canceled).

13. (currently amended) The composition of claim 2, wherein the photoluminescent molecule is 4-(2-hydroxyethylthio)-7-aminosulfonyl-2,1,3-benzoxadiazole, ~~7-fluorobenz-2-oxa-1,3-diazole-4-sulfonamide- $\beta$ -mercaptoethanol-adduct~~.

14 -22. (canceled).

23. (withdrawn - currently amended) A kit for assay of divalent metal ion concentration in a sample comprising:

- i) an apo-carbonic anhydrase protein;
- ii) a photoluminescent molecule selected from the group consisting of 4-aminosulfonyl[1-(4-N-(5-fluoresceinylthioureido))butyl]benzamide, 4-(2-hydroxyethylthio)-7-aminosulfonyl-2,1,3-benzoxadiazole, ~~7-fluorobenz-2-oxa-1,3-diazole-4-~~

hydroxynaphthalenesulphonamide, 2-(3-methoxy-4-ethoxyphenyl)-4-chloroquinoline-6-sulfonamide, N-(1-anthracenyl)-4-sulfonamido-benzenesulfonamide, ethyl-2-(4-sulfonamidophenyl)-4-hydroxyquinoline-6-carboxylate and N-(N'-(4'-sulfamoylglutaranilylamidoethyl))-4-amino-3,6-disulfo-1,8-naphthalimide

~~iii) optionally a standard solution of a divalent metal ion;~~

~~iv) optionally a buffer for maintaining a concentration of free divalent metal ion in a solution; and~~

~~v) optionally a chelating resin to prevent or remove unwanted metal contamination;~~

said items i), and ii), ~~iii)~~, ~~iv)~~ and ~~v)~~ being packaged in a container that prevents unwanted contamination by divalent metal ions.

24. (canceled).

25. (new) The kit of claim 23, further comprising iii) a standard solution of a divalent metal ion that is packaged in a container that prevents unwanted contamination by divalent metal ions.

26. (new) The kit of claim 23, further comprising iii) a buffer for maintaining the concentration of a free divalent metal ion in a solution that is packaged in a container that prevents unwanted contamination by divalent metal ions.

27. (new) The kit of claim 23, wherein the buffer for maintaining a concentration of free divalent metal ion is nitrilotriacetic acid.

28. (new) The kit of claim 23, further comprising iii) a chelating resin for preventing or removing unwanted divalent metal ion contamination that is packaged in a container that prevents unwanted contamination by divalent metal ions.

29. (new) The kit of claim 25, further comprising iv) a buffer for maintaining the concentration of a free divalent metal ion in a solution that is packaged in a container that prevents unwanted contamination by divalent metal ions.

30. (new) The kit of claim 29, wherein the buffer for maintaining a concentration of free divalent metal ion is nitrilotriacetic acid.

31. (new) The kit of claim 25, further comprising iv) a chelating resin for preventing or removing unwanted divalent metal ion contamination that is packaged in a container that prevents unwanted contamination by divalent metal ions.

32. (new) The kit of claim 31, further comprising v) a buffer for maintaining the concentration of a free divalent metal ion in a solution that is packaged in a container that prevents unwanted contamination by divalent metal ions.

33. (new) The kit of claim 32, wherein the buffer for maintaining a concentration of free divalent metal ion is nitrilotriacetic acid.